REMARKS

The purpose of this preliminary amendment is to clarify the application as originally filed. Favorable consideration of this application is respectfully requested.

Respectfully submitted,

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ATTACHMENT FOR SPECIFICATION AMENDMENTS

The following is a marked up version of each replacement paragraph and/or section of the specification in which underlines indicates insertions and brackets indicate deletions.

[0010] FIGURE 1a is a [mutirouter] <u>multirouter</u> network interconnection diagram illustrating how router tables would be configured in a prior art system;

[0039] Consider the zeroconf network of Figure 3. As the Figure depicts, the ARM router R1 assigns LD-subnetids a_{11} and a_{12} to its interfaces. So, from the viewpoint of the IP layer of R1, the whole network consists of 2 segments with subnet numbers $a_{11}.0$ and $a_{12}.0$. Externally however, the hosts sit on the link-local subnet. The ARM layer is [respoinsible] <u>responsible</u> for the mapping between the LD-subnetids used by the IP layer and the ED-subnetids. R1 maintains the following ARM table:

Interface	ED-Subnetid	LD-Subnetid
1	l	a_{11}
2	l	a_{12}

[0057] ARIP uses a packet format [simlar] <u>similar</u> to RIPv2 except that ARIP augments a RTE with additional fields used for uniquely identifying a segment.

The packet formats are shown in Figure 6. Comparison of ARIP RTE to RIPv2 RTE (Figures 6 and 4) shows that ARIP adds 12 more bytes to the RIP RTE. The Address Family Identifier and Route Tag fields have the same meaning as in RIP. Address Family Identifier is always AF-INET as in RIP and means that it is an Internet address. Interface Type augmented with the Unique Interface Identifier make up the 12 byte UID for the RTE. The UID identifies the interface of the router that owns this RTE. The rest of the fields in a RTE has the same meaning as in RIPv2. IP Address is the IP address of the subnet for the segment connected to the interface of the router, Netmask is the network mask assigned by the router and Next Hop is the IP address of the router where the packets must be sent to reach this route. Each RTE in an ARIP packet is 32 bytes. Because an ARIP packet can be at most 512 bytes, an ARIP packet can contain at most fifteen RTEs. If the routing table to a router contains more routes, additional packets are sent.

[0058] Assume that all the routers in Figure 5 are interconnected as shown to form a network consisting of 3 routers. Consider a packet that arrives at interface 1 of R1. Assume that the subnet number of the source IP address of the incoming packet is a_2.0. When R1 receives the packet, the ARM layer needs to remap the source IP of the packet before delivering it to the IP layer. Specifically, the ARM layer at R1 needs to identify the segment where the packet is coming from. If the ARM table only keeps the UID and the external to local mapping as the ARM table in Table XI shows, R1 cannot determine the new source address for the packet because it cannot uniquely identify the segment that the packet is coming from. This is due to the fact that both R2

and R3 are [localy] locally using $a_2.0$ for the segments connected to their interface 2. So, the packet is coming either from a host connected to interface 2 or R3 (host A) or from a host connected to interface 2 of R2 (host C). R1 cannot determine where the packet is coming from without additional information. Notice that the packet does not contain the UID of the segment from where it originated but it contains the MAC address of the router which forwarded it. So, by keeping the MAC address of the router which advertises a route, R1 can identify the segment and the new source IP of the packet.

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{11}	*	I	a_1	1	$a_1.0$	$a_1.R_{11}$	1
U_{12}	*	I	a_2	2	$a_2.0$	$a_2.R_{12}$	1
U_{13}	*	I	a_3	3	$a_3.0$	$a_3.R_{13}$	1
U_{21}	MAC_{21}	a_1	a_4	1	$a_4.0$	$a_4.R_{21}$	2
U_{22}	MAC_{21}	a_2	a_5	1	$a_5.0$	$a_4.R_{21}$	2
U_{23}	MAC_{21}	a_3	a_6	1	$a_6.0$	$a_4.R_{21}$	2
U_{31}	MAC_{31}	a_1	a_7	1	$a_7.0$	$a_7.R_{31}$	2
U_{32}	MAC_{31}	a_2	a_8	1	$a_8.0$	$a_7.R_{31}$	2
U_{33}	MAC_{31}	a_3	a_9	1	$a_9.0$	$a_7.R_{31}$	2

Paragraph [0062] Table (b) (page 37 of the specification; 2nd table) is amended as follows:

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{21}	*	I	a_{21}	1	$a_{21}.0$	$a_{21}.R_{21}$	1
U_{22}	*	I	a_{22}	2	$a_{22}.0$	$a_{22}.R_{22}$	1
U_{23}	*	I	a_{23}	3	$a_{23}.0$	$a_{23}.R_{23}$	1
U_{11}	MAC_{12}	a_{11}	a_{24}	1	[$a_{25}.0$] $\underline{a_{24}.0}$	$a_{25}.R_{12}$	2
U_{12}	MAC_{12}	a_{12}	a_{25}	1	[$a_{26}.0$] $\underline{a_{25}.0}$	$a_{25}.R_{12}$	2
U_{13}	MAC_{12}	a_{13}	a_{26}	1	[$a_{27}.0$] $\underline{a_{26}.0}$	$a_{25}.R_{12}$	2

(b) ARM Table at R2 after the first ARIP message exchange.

[0063] Clearly, after the first ARIP message is exchanged between R1 and R2, the new zeroconf network stabilizes. Both R1 and R2 update their ARM tables properly and learn the complete topology of the network.

R3 is connected to R2: When R3 is connected to R2, the routers auto-configure in a similar manner based on ARIP messages. Table XVI shows the ARM tables at R2 and R3 after the first ARIP packet exchange between them. At this point R2 and R3 know the [ocmplete] complete topology of the network. Again, both routers learn the existence of new segments (routes) in the network and assign LD-subnetids for them.

[0064] It takes one more ARIP message exchange for R1 to learn the complete topology of the network. When

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{21}	*	I	a_{21}	1	$a_{21}.0$	$a_{21}.R_{21}$	1
U_{22}	*	I	a_{22}	2	$a_{22}.0$	$a_{22}.R_{22}$	1
U_{23}	*	I	a_{23}	3	$a_{23}.0$	$a_{23}.R_{23}$	1
U_{11}	MAC_{12}	a_{11}	a_{24}	1	[$a_{25}.0$] $\underline{a_{24}.0}$	[$a_{23}.R_{12}$] $\underline{a_{25}.R_{12}}$	2
U_{12}	MAC_{12}	a_{12}	a_{25}	1	[$a_{26}.0$] $\underline{a_{25}.0}$	[$a_{23}.R_{12}$] $\underline{a_{25}.R_{12}}$	2
U_{13}	MAC_{12}	a_{13}	a_{26}	1	[$a_{27}.0$] $\underline{a_{26}.0}$	$a_{25}.R_{12}$	2
U_{31}	MAC_{32}	a_{31}	a_{27}	3	$a_{27}.0$	[$a_{25}.R_{32}$] $\underline{a_{28}.R_{32}}$	2
U_{32}	MAC_{32}	a_{32}	a_{28}	3	$a_{28}.0$	$a_{28}.R_{32}$	2
U_{33}	MAC_{32}	a_{33}	a_{29}	3	$a_{29}.0$	$a_{28}.R_{32}$	2

(a) ARM Table at R2 after R3 is attached to R2.

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{31}	*	I	a_{31}	1	$a_{31}.0$	$a_{31}.R_{31}$	1
U_{32}	*	I	a_{32}	2	$a_{32}.0$	$a_{32}.R_{32}$	1
U_{33}	*	I	a_{33}	3	$a_{33}.0$	$a_{33}.R_{33}$	1
U_{21}	MAC_{23}	a_{21}	a_{34}	2	[$a_{36}.0$] $\underline{a_{34}.0}$	$a_{36}.R_{23}$	2
U_{22}	MAC_{23}	a_{22}	a_{35}	2	[$a_{36}.0$] $\underline{a_{35}.0}$	$a_{36}.R_{23}$	2
U_{23}	MAC_{23}	a_{23}	a_{36}	2	$a_{36}.0$	$a_{36}.R_{23}$	2
U_{11}	MAC_{23}	a_{24}	a_{37}	2	$a_{37}.0$	$a_{36}.R_{23}$	3
U_{12}	MAC_{23}	a_{25}	a_{38}	2	$a_{38}.0$	$a_{36}.R_{23}$	3
U_{13}	MAC_{23}	a_{26}	a_{39}	2	$a_{39}.0$	$a_{36}.R_{23}$	3

(b) ARM Table at R3 after R3 is attached to R2.

Table XVI: ARM Tables at R2 and R3 after R3 is connected to R2 R2 sends its next ARIP message to R1, R1 sees that there are now new routes through R2 and update its ARM table. Table XVII shows the new ARM table at R1.

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{11}	*	I	a_{11}	1	$a_{11}.0$	$a_{11}.R_{11}$	1
U_{12}	*	I	a_{12}	2	$a_{12}.0$	$a_{12}.R_{12}$	1
U_{13}	*	I	a_{13}	3	$a_{13}.0$	$a_{13}.R_{13}$	1
U_{21}	MAC_{21}	a_{21}	a_{14}	2	$a_{14}.0$	$a_{14}.R_{21}$	2
U_{22}	MAC_{21}	a_{22}	a_{15}	2	$a_{15}.0$	$a_{14}.R_{21}$	2
U_{23}	MAC_{21}	a_{23}	a_{16}	2	$a_{16}.0$	$a_{14}.R_{21}$	2
U_{31}	MAC_{21}	a_{27}	a_{17}	2	$a_{17}.0$	[$a_{14}.R_{14}$] $\underline{a_{14}.R_{21}}$	3
U_{32}	MAC_{21}	a_{28}	a_{18}	2	$a_{18}.0$	[$a_{14}.R_{14}$] $\underline{a_{14}.R_{21}}$	3
U_{33}	MAC_{21}	a_{29}	a_{19}	2	$a_{19}.0$	[$a_{14}.R_{14}$] $\underline{a_{14}.R_{21}}$	3

Table XVII: ARM Table at R1 after R2 and R3 is connected

Paragraph [0065] Table (b) (page 41 of the specification; 2nd table) is amended as follows:

UID	MAC	ED-Subnetid	LD-Subnetid	If	Dest	GW	Metric
U_{31}	*	I	a_{31}	1	$a_{31}.0$	$a_{31}.R_{31}$	1
U_{32}	*	I	a_{32}	2	$a_{32}.0$	$a_{32}.R_{32}$	1
U_{33}	*	I	a_{33}	3	$a_{33}.0$	$a_{33}.R_{33}$	1
U_{21}	MAC_{23}	a_{21}	a_{34}	2	[$a_{36}.0$] $\underline{a_{34}.0}$	$a_{36}.R_{23}$	2
U_{22}	MAC_{23}	a_{22}	a_{35}	2	[$a_{36}.0$] $\underline{a_{35}.0}$	$a_{36}.R_{23}$	2
U_{23}	MAC_{23}	a_{23}	a_{36}	2	$a_{36}.0$	$a_{36}.R_{23}$	2
U_{11}	MAC_{13}	a_{11}	a_{37}	1	$a_{37}.0$	$a_{39}.R_{13}$	2
U_{12}	MAC_{13}	a_{12}	a_{38}	1	$a_{38}.0$	$a_{39}.R_{13}$	2
U_{13}	MAC_{13}	a_{13}	a_{39}	1	$a_{39}.0$	$a_{39}.R_{13}$	2

(b) The final ARM table at R3 after R3 is connected to R1.